REMARKS

A. STATUS OF CLAIMS

Claims 2-4, 6-8, and 10-15 are pending.

Applicant's independent claims have been amended to clarify the claimed invention. The features include that an input voice signal representing a voice sound is analyzed to determine if the voice contains a vowel sound. If the vowel is present in the voice signal, an encoding bit rate for the voice signal having the vowel sound is set to a level lower than the encoding bit rate of the input voice signal.

Claims 2, 3, 6, 7, 10, and 11 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Lee et al. in view of Gersho et al.

Claims 4, 8, and 12 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Lee et al. in view of Gersho et al. and further in view of Kang et al.

Claims 13-15 stand rejected under 35 U.S.C. § 103(a) as being as being unpatentable over Lee et al. in view of Gersho et al. and further in view of Das.

B. REJECTIONS UNDER 35 U.S.C. § 103

A. Claims 2, 3, 6, 7, 10 and 11 stand rejected under 35 U.S.C. §103 as unpatentable over Lee et al. (Lee) in view of Gersho et al. (Gersho)

It's admitted in the Office Action with regard to the limitations recited in claims 2, 6 and 10 that Lee does not disclose "a rate setting unit setting a voice encoding bit rate, if the voice signal is a vowel said voice encoding bit rate is set to a bit rate lower than the bit rate usually used when the voice part is sounded." The Office Action points to Gersho for such a feature.

However it is also respectfully submitted that Lee does not teach judging a vowel is present in a voice signal when an interval on a frequency axis between the LSP coefficients is equal to or less than a prescribed threshold value.

The Office Action points to page 999 of Lee to contend the detection of vowel sounds is taught. However Lee states that certain vowel sounds have a high second, third and fourth formant. Lee states to determine u/v: "[S]uch frames are decided by the existence of first formant."

Thus Lee teach determining u/v even when a voiced part has certain vowels which may exhibit characteristics of an un-voiced part. Lee does not teach judging a vowel is present in the voice signal.

Its contended, that Gersho suggest variable rate speech coding for phonetic segments including certain vowels in order to reduce the overall bit rate.

Gersho provide an overview paper that generally discusses variable rate speech encoding systems. In one particular passage, Gersho mention that certain sustained vowel sounds exhibit a large amount of interframe correlation of spectrum and pitch that provides an opportunity to save bits during encoding. (See page 174, left column).

However Gersho specifically states that "It appears that a trend in favor of a phonetic segmentation is already emerging:.... although the bit rate is necessarily fixed as required for the TDMA application. Nevertheless coder based on phonetic segmentation are well-suited for variable-rate coding."

In addition Gersho states with regard to sustained vowel sounds: "This correlation can be exploited by using differential encoding and appropriate interpolation of short term and long term predictor parameters."

Thus, Gersho states that differential encoding can be used to exploit the sustained vowel sound and also afterwards states that the bit rate is necessarily fixed. Gersho does not specifically teach a variable rate encode as claimed by applicant.

Gersho relates only theorizes about what might be possible given the characteristics of sustained vowel sounds without providing any specific details or implementation.

Accordingly, the general statements of Gersho do not disclose nor suggest, a variable-rate encoding system that determines the existence of any vowel and specifically reduces an encoding bit rate for that vowel, as positively recited in the claims.

Applicants urge, therefore, that Gersho do not disclose nor suggest, with the specificity necessary to support a rejection under 35 U.S.C. §103, the rate setting unit recited in claim 2.

In addition the determination in Lee is unrelated to changing the encoding bit rate for a vowel as compared to the bit rate used for other voiced speech without a vowel part. Accordingly, Lee do not teach nor suggest detection of a vowel in a voice signal nor encoding a vowel portion of a voice signal at a lower bit rate than the bit rate usually used for the voice signal when the vowel is not present, as recited in the claims.

Thus, even if combined, these two references do not disclose or suggest all the limitations recited in claim 2 and, therefore, do not provide the requisite factual basis to support a rejection under 35 U.S.C. §103. Applicants respectfully request reconsideration and withdrawal of the rejection under 35 U.S.C. §103 of claim 2, and its dependent claim 3. In addition, claims 6 and 10 recite a similar limitation of setting a voice encoding bit rate lower than the bit rate usually used, if the voice signal is a vowel. Accordingly, for at least the reasons given above with respect to claim 2, Applicants request reconsideration and withdrawal of the rejection under 35 U.S.C. §103 of claims 6 and 10 and their respective dependent claims 7 and 11.

Claims which depend from claims 2, 6 and 10 stand rejected under 35 U.S.C. §103 as unpatentable over the combination of Lee and Gersho in combination with additional references purportedly suggesting the specific limitations recited in the dependent claims. The additional references include Kang et al. and Das. As neither of these references remedy the omission of certain claim limitations by Lee and Gersho, as discussed above with respect to the independent claims, Applicants respectfully request reconsideration and withdrawal of the rejection of dependent claims 4, 8, 12, and 13-15, for at least the reasons already presented. Additional arguments with respect to the dependent claims are presented below.

B. Claims 4, 8 and 12 stand rejected under 35 U.S.C. §103 as unpatentable over Lee in view of Gersho and further in view of Kang et al.

The Office Action admits that neither Lee nor Gersho disclose using templates to determine whether a speech segment is a vowel. Its contended that Kang et al. teaches filter coefficient templates to represent vowels and concludes it would have been obvious to modify the vocoder of Lee to determine whether a speech segment is a vowel for purposes of reducing the bit rate.

Applicants respectfully disagrees. Lee is concerned with separating voiced sound segments from unvoiced sound segments. One of ordinary skill in the art would have had no realistic motivation to specifically modify the vocoder of Lee. The bit rate within the vocoder of Lee is the same for voiced sound whether that voiced sound is a vowel or not. Thus, the use of templates to detect vowels within the vocoder of Lee would not have resulted in "reducing the bit rate" as proposed by the Examiner. Applicants urge therefore, that one of ordinary skill would not have been realistically motivated to modify the vocoder of Lee et al. to include the vowel

templates of Kang et al. because no benefit would have been gained by doing so. Without a cogent explanation of why one of ordinary skill would have been realistically motivated to combine the teachings of the different references to arrive at the specific claimed invention, the burden of establishing a prima facie case of obviousness to support the rejection under 35 U.S.C. §103 of claims 4, 8 and 12, has not been discharged.

Applicants respectfully request reconsideration and withdrawal of the rejection of the dependent claims for at least the foregoing reasons and reasons set forth in previous responses.

In view of the remarks set forth above, this application is in condition for allowance which action is respectfully requested. However, if for any reason the Examiner should consider this application not to be in condition for allowance, the Examiner is respectfully requested to telephone the undersigned attorney at the number listed below prior to issuing a further Action.

Any fee due with this paper may be charged to Deposit Account No. 50-1290.

Respectfully submitted,

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